§ 52.01–100 Openings and compensation (modifies PG–32 through PG–39, PG–42 through PG–55).

(a) The rules for openings and compensation shall be as indicated in PG–32 through PG–55 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section.

(b) (*Modifies PG–39.*) Pipe and nozzle necks shall be attached to vessel walls as indicated in PG–39 of section I of the ASME Boiler and Pressure Vessel Code except that threaded connections shall not be used under any of the following conditions:

(1) Pressures greater than 4,137 kPa (600 psig);

(2) Nominal diameters greater than 51 mm (2 in.); or

(3) Nominal diameters greater than 19 mm (0.75 in.) and pressures above 1,034 kPa (150 psig).

(c) (*Modifies PG–42.*) Butt welding flanges and fittings must be used when full radiography is required by § 56.95–10.

[CGD 81–79, 50 FR 9432, Mar. 8, 1985, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§ 52.01–105 Piping, valves and fittings (modifies PG–58 and PG–59).

(a) Boiler external piping within the jurisdiction of the ASME Boiler and Pressure Vessel Code must be as indicated in PG–58 and PG–59 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section. Piping outside the jurisdiction of the ASME Boiler and Pressure Vessel Code must meet the appropriate requirements of part 56 of this subchapter.

(b) In addition to the requirements in PG–58 and PG–59 of section I of the ASME Boiler and Pressure Vessel Code, boiler external piping must:

(1) Meet the design conditions and criteria in § 56.07–10 of this subchapter, except § 56.07–10(b);

(2) Be included in the pipe stress calculations required by § 56.35–1 of this subchapter;

(3) Meet the nondestructive examination requirements in § 56.95–10 of this subchapter;

(4) Have butt welding flanges and fittings when full radiography is required; and

(5) Meet the requirements for threaded joints in § 56.30–20 of this subchapter.

(c) Steam stop valves, in sizes exceeding 152mm (6 inch) NPS, must be fitted with bypasses for heating the line and equalizing the pressure before the valve is opened.

(d) *Feed connections.* (1) Feed water shall not be discharged into a boiler against surfaces exposed to hot gases or radiant heat of the fire.

(2) Feed water nozzles of boilers designed for pressures of 2758 kPa (400 psi), or over, shall be fitted with sleeves or other suitable means employed to reduce the effects of metal temperature differentials.

(e) *Blowoff connections.* (1) Firetube and drum type boilers shall be fitted with a surface and a bottom blowoff valve or cock attached directly to the boiler or to a short distance piece. The surface blowoff valve shall be located within the permissible range of the water level, or fitted with a scum pan or pipe at this level. The bottom blowoff valve shall be attached to the lowest part of the boiler or fitted with an internal pipe leading to the lowest point inside the boiler. Watertube boilers designed for pressures of 2413 kPa (350 psig) or over are not required to be fitted with a surface blowoff valve. Boilers equipped with a continuous blowdown valve on the steam drum are not required to be fitted with an additional surface blowoff connection.

(2) Where blowoff pipes are exposed to radiant heat of the fire, they must be protected by fire brick or other suitable heat-resisting material.

(f) *Dry pipes.* Internal dry pipes may be fitted to the steam drum outlet provided the dry pipes have a diameter equal to the steam drum outlet and a wall thickness at least equal to standard commercial pipe of the same diameter. Openings in dry pipes must be as near as practicable to the drum outlet and must be slotted or drilled. The width of the slots must not be less than 6mm (0.25 in.). The diameter of the holes must not be less than 10mm (0.375 in.). Where dry pipes are used, they must be provided with drains at each

end to prevent an accumulation of water.

[CGD 81–79, 50 FR 9432, Mar. 8, 1985, as amended by USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]

§52.01–110 Water-level indicators, water columns, gauge-glass connections, gauge cocks, and pressure gauges (modifies PG–60).

(a) *Boiler water level devices.* Boiler water level devices shall be as indicated in PG–60 of section I of the ASME Boiler and Pressure Vessel Code (incorporated by reference; see 46 CFR 52.01–1) except as noted otherwise in this section.

(b) *Water level indicators.* (*Modifies PG–60.1.*) (1) Each boiler, except those of the forced circulation type with no fixed water line and steam line, shall have two independent means of indicating the water level in the boiler connected directly to the head or shell. One shall be a gage lighted by the emergency electrical system (See Subpart 112.15 of Subchapter J (Electrical Engineering) of this chapter) which will insure illumination of the gages under all normal and emergency conditions. The secondary indicator may consist of a gage glass, or other acceptable device. Where the allowance pressure exceeds 1724 kPa (250 psi), the gage glasses shall be of the flat type instead of the common tubular type.

(2) Gage glasses shall be in continuous operation while the boiler is steaming.

(3) Double-ended firetube boilers shall be equipped as specified in this paragraph and paragraph (e) of this section except that the required water level indicators shall be installed on each end of the boiler.

(4) Externally fired flue boilers, such as are used on central western river vessels, shall be equipped as specified in paragraphs (b) (1) through (3) of this section except that float gages may be substituted for gage glasses.

(c) *Water columns.* (*Modifies PG–60.2.*) The use of water columns is generally limited to firetube boilers. Water column installations shall be close hauled to minimize the effect of ship motion on water level indication. When water columns are provided they shall be fitted directly to the heads or shells of boilers or drums by 1 inch minimum size pipes with shutoff valves attached directly to the boiler or drums, or if necessary, connected thereto by a distance piece both at the top and bottom of the water columns. Shutoff valves used in the pipe connections between the boiler and water column or between the boiler and the shutoff valves, required by PG–60.6 of section I of the ASME Boiler and Pressure Vessel Code for gauge glasses, shall be locked or sealed open. Water column piping shall not be fitted inside the uptake, the smoke box, or the casing. Water columns shall be fitted with suitable drains. Cast iron fittings are not permitted.

(d) *Gage glass connections.* (*Modifies PG–60.3.*) Gage glasses and gage cocks shall be connected directly to the head or shell of a boiler as indicated in paragraph (b)(1) of this section. When water columns are authorized, connections to the columns may be made provided a close hauled arrangement is utilized so that the effect of ship roll on the water level indication is minimized.

(e) *Gage cocks.* (*Modifies PG–60.4.*) (1) When the steam pressure does not exceed 250 pounds per square inch, three test cocks attached directly to the head or shell of a boiler may serve as the secondary water level indicator.

(2) See paragraph (d) of this section for restrictions on cock connections.

(f) *Pressure gages.* (*Modifies PG–60.6.*) Each double-ended boiler shall be fitted with two steam gages, one on either end on the boiler.

(g) *Salinometer cocks.* In vessels operating in salt water, each boiler shall be equipped with a salinometer cock or valve which shall be fitted directly to the boiler in a convenient position. They shall not be attached to the water gage or water column.

(h) *High-water-level alarm.* Each watertube boiler for propulsion must have an audible and a visible high-water-level alarm. The alarm indicators must be located where the boiler is controlled.

[CG FR 68–82, 33 FR 18815, Dec. 18, 1968, as amended by CGD 81–79, 50 FR 9433, Mar. 8, 1985; CGD 83–043, 60 FR 24772, May 10, 1995; USCG–2003–16630, 73 FR 65161, Oct. 31, 2008]